

COMPONENTS

FAQ

Q I have a Core 2 Duo processor and I've noticed an option for SpeedStep in my BIOS. What is it and do I need it?

A SpeedStep is an Intel technology that reduces a processor's speed when it's idle. It does this dynamically by reducing a processor's multiplier, which slows down its clock speed without affecting other components such as the memory.

The idea behind it is that a processor uses less power at lower clock speeds, so it saves on energy when your PC isn't doing anything too strenuous. It also keeps your processor cooler, prolonging its life, and makes your PC quieter, as the system fans don't need to spin as fast. You can disable SpeedStep in the BIOS and run your PC at maximum speed all the time, but it's best to leave it enabled.

David Ludlow
Deputy Editor

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SHUTTLE XPC SD39P2

★★★★★

£330 inc VAT

Shuttle's XPC SD39P2 shows that mini PCs don't have to be underpowered compared with their full-size desktop equivalents. With an Intel 975X-based motherboard, this barebones PC can house any Intel Core 2 Duo processor. The four dual-channel memory slots can take up to 8GB of 800MHz DDR2 memory, so there's plenty if you want to install Windows Vista.

Another benefit of the 975X chipset is that the BIOS is well featured, so you can adjust memory timings and bus speeds if you fancy overclocking your system. We don't recommend pushing it too far, though, as the proximity of the components in this small case makes it hard to dissipate heat.

Inside the case there's an optical drive tray and an external 3½in drive bay, which you can use for a hard disk or memory card reader. It's a shame that Shuttle no longer provides its kits with a built-in memory card reader, though. There are a further two hard disk bays that sit at the top of the case. Shuttle has thoughtfully run the SATA power and data cables to these bays. A little more thought would have been appreciated, though, as one of the SATA data cables isn't long enough to reach the hard disk when it's neatly clipped out of the way. Once it was unclipped, we had trouble plugging it in, as its L-shaped connector was fiddly to use. A standard straight connector would have made things a lot simpler. The rest of the PC is much easier to put together and Shuttle even provides the thermal paste you'll need to use with the supplied processor cooler.

There's no onboard graphics, but you can install a dedicated graphics card in the PCI-E x16 slot. You can fit double-slot cards, but only if you're sure you don't want to use the PCI slot for an expansion card.



At first we were a little worried about the five fans, especially considering our previous experience of noisy Shuttle computers. Thankfully, the SD39P2 is mercifully quiet; Shuttle has clearly changed its fan supplier and now uses quieter models. We could barely hear the PC when it was on and, even better, it didn't get much louder when running processor-intensive tasks such as games.

There's a full range of expansion ports including two front-mounted USB2 ports. The rear panel has six further USB2 ports, as well as Gigabit Ethernet, eSata and 7.1 audio. Strangely, there are no PS/2 ports, so you'll have to invest in a USB keyboard if you don't already have one.

Performance was very good under Windows Vista using our Core 2 Duo E6300 processor. Games performance was also as good as we expected with our Radeon X1950 Pro card.

If you want to build a small but powerful PC, Shuttle's XPC SD39P2 is an excellent choice. It will support all Intel's processors, it can accommodate three hard disks, and it provides a graphics card slot and all the performance you'd hope for. It is fairly expensive, though, and those who want to build a less-powerful computer would be better off with Shuttle's XPC SD32G2 (see 'Also consider...' on the opposite page).

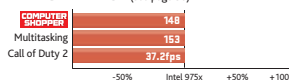
David Ludlow

SUMMARY

- ✓ Lots of room for hard disks
- ✓ Intel 975X chipset
- ✗ Expensive

BAREBONES PC LGA775 processor socket, four DDR2 memory slots, PCI-E x16, three SATA2 ports, 10/100/1,000 network, eight USB2, two FireWire, 7.1 audio, 5¼in drive bay, three 3½in drive bays (one external)
PART CODE XPC SD39P2
SUPPLIER www.shoebboxcomputers.co.uk
DETAILS www.shuttle.com

PERFORMANCE (see page 56)



Also consider...

INTEL Core 2 Duo E6700

★★★★★

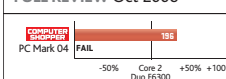
£321 inc VAT



BEST BUY Intel's new processor is based on the company's mobile technology. It is designed to be much more efficient than the P4. It's incredibly quick, achieving some of the highest benchmark results we've ever seen. You'll need a new Intel 965 or 975-based motherboard to use the E6700, but it's worth every penny, as it's by far the best-value processor you can buy.



PROCESSOR Two cores running at 2.66GHz, LGA775, 267MHz external bus, 4MB L2 cache
PART CODE BX805576700
SUPPLIER www.techfever.co.uk
DETAILS www.intel.com
✓ Extremely fast; great value
FULL REVIEW Oct 2006



GIGABYTE GV-RX195P 256D-RH

★★★★★

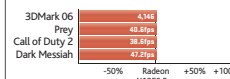
£136 inc VAT



BEST BUY Gigabyte's Radeon X1950 Pro-based graphics card uses a Zalman VF700 cooler, so it's silent as well as powerful. It's incredibly fast, tearing through our games tests with an impressive score of 50.7fps in Call of Duty 2. The price is unbelievable. This is the best-value graphics card you can buy.



GRAPHICS CARD ATI Radeon X1950 Pro, PCI-E x16 interface, 36 pixel pipelines, 256MB GDDR3 memory running at 700MHz (1.4GHz effective), 600MHz core speed, two DVI, TV-out **PART CODE** GV-RX195P256D-RH
SUPPLIER www.lambdatek.com
DETAILS www.gigabyte.com.tw
✓ Excellent performance
✗ Fan quite bulky
FULL REVIEW Mar 2007



FOXCONN

WinFast MCP61SM2MA

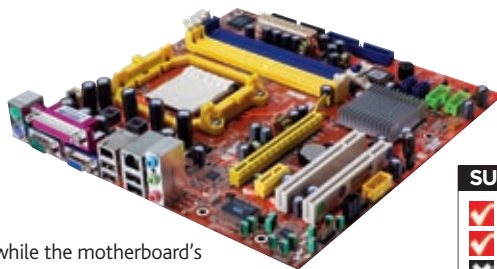
★★★★★

£35 inc VAT



If you want to build a budget PC, Foxconn's WinFast MCP61SM2MA is as cheap as you'll get. This Socket AM2 board supports the full range of AMD's new processors including the high-end FX-62. It also has four memory slots that will accept DDR2 memory up to 800MHz.

The MCP61SM2MA uses Nvidia's Nforce 405 chipset and has integrated GeForce 6100 graphics. While this chipset supports DVI, Foxconn has included only an analogue D-sub output. The graphics aren't powerful enough for graphically complex games, but they're fine for 2D Windows applications. If you fancy playing games, you can fit a graphics card into the PCI-E x16 slot, although you'll have to be careful as the memory card slots can get in the way of a long



card, while the motherboard's heatsink makes getting at the PCI-E x16 slot's retaining clip difficult.

We weren't expecting the motherboard to be so well stocked, but the rear panel has four USB2, FireWire, 5.1 audio and 10/100 Ethernet ports. There are only two SATA2 ports, so it could be tricky to update your storage later.

Performance was pretty good and around what we'd expect with our AMD Athlon 64 4200+ installed. For a budget PC, Foxconn's WinFast MCP61SM2MA is excellent value and worthy of a Budget Buy award. If you want DVI outputs, perhaps for a Media Center PC, get ECS's AMD690GM-M2 (see page 44).

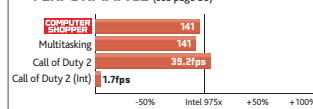
David Ludlow

SUMMARY

- ✓ Onboard graphics
- ✓ Excellent value
- ✗ Memory may block graphics card

AMD MOTHERBOARD Nvidia Nforce 405 chipset, supports AMD Socket AM2 processors, two PCI, one PCI-E x1, one PCI-E x16 slot, four DIMM slots, 10/100 Ethernet, four USB2, FireWire
PART CODE MCP61SM2MA
SUPPLIER www.lambda-tek.com
DETAILS www.foxconnchannel.com

PERFORMANCE (see page 56)



SAPPHIRE

Radeon X1550

★★★★★

£40 inc VAT



If you have an older PC, your existing graphics may not cope very well with Windows Vista should you decide to upgrade. Sapphire's Radeon X1550 is a low-priced card designed primarily for upgraders.

With four pixel pipelines, a 550MHz core and 256MB of DDR2 memory running at 400MHz (800MHz effective) it's not the most powerful graphics card on earth, but it's DirectX 9c compatible and will handle Vista's new interface smoothly.

Games performance, as you might expect, isn't very good at high resolutions with high detail settings, as you can see from the test results (right). The X1550 did particularly badly in Prey, as ATI cards are slower



than Nvidia cards at OpenGL games. Turn off anti-aliasing and anisotropic filtering, though, and things improve. We managed to get 34.6fps in Dark Messiah running at a resolution of 1,280x1,024. Games aren't everything, and the Radeon X1550 also supports ATI's AVIVO video-acceleration technology, so it's useful if you're going to use your PC for more than just games.

If 3D is a bit sluggish on your PC or the Vista Upgrade Advisor has warned you that your graphics aren't up to the job, Sapphire's X1550 is a bargain. As it's capable of playing games at low detail settings, it's a good choice for budget buyers who are looking for an upgrade.

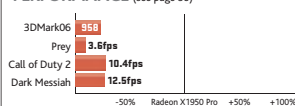
David Ludlow

SUMMARY

- ✓ Good value
- ✓ Capable of playing games
- ✗ Slow in OpenGL games

GRAPHICS CARD ATI RadeonX1550, PCI-E x16 interface, 550MHz core, 256MB DDR2 memory running at 400MHz (800MHz effective), two DVI, TV out (S-video and component)
PART CODE 11093-09-20R
SUPPLIER www.ebuyer.com
DETAILS www.sapphiretech.com

PERFORMANCE (see page 56)

ANTEC
P150

★★★★★

£92 inc VAT



Antec's P150 case looks great and is designed to keep your PC silent. It doesn't rattle, it has acoustic insulation and the hard disks screw into rubber grommets to prevent echoing vibrations. A silent Antec Neo HE 430W modular power supply is included.

The case has been discontinued, so this is your last chance to buy one.



SILENT PC CASE ATX case, 120mm fan, two USB2, one FireWire, two audio ports, two 5 1/4in drive bays, one external 3 1/2in drive bay, four internal 3 1/2in drive bays
PART CODE 0761345-019151-0 SUPPLIER www.morecomputers.com
DETAILS www.antec.com
✓ Attractive; comes with power supply
✗ Drive bays hard to access
FULL REVIEW Mar 2006

SHUTTLE
XPC SD32G2

★★★★★

£200 inc VAT

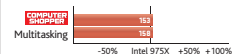


The SD32G2 looks smart, but you'll need an optical drive with a silver bezel to

avoid spoiling its looks. It's easy to build thanks to the detailed instructions. Performance was excellent in our 2D tests, near the top of the recent Labs. With support for Core 2 Duo processors, it's an excellent barebones kit.



BAREBONES PC LGA775 processor socket, two DDR2 533/667 DIMM slots, Intel 945G graphics, one PCI-E x16, two SATA ports, 10/100/1,000 network, six USB2, two FireWire, 7.1 audio, one 5 1/4in bays, two 3 1/2in bays
PART CODE SD32G2 SUPPLIER www.ebuyer.com
DETAILS www.shuttle.com
✓ Plenty of room inside case; Easy to assemble
FULL REVIEW Apr 2007

ZEROTHERM
CF800

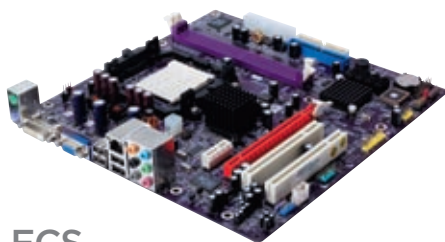
★★★★★

£20 inc VAT

If you want to replace your LGA775 cooler, ZeroTherm's CF800 is a good choice. The low-profile cooler and fan kept our Core 2 Duo E6300 processor running 5°C cooler under load than the reference Intel cooler. Its automatic fan speed adjustment should help ensure that your PC is quieter, too.



PROCESSOR COOLER Supports Intel LGA775 processors, 90mm fan, 800-2,300rpm spin speed, 16-30dBa operating volume
PART CODE CF800 SUPPLIER www.quietpc.com
DETAILS www.zerotherm.net
✓ Good value; automatic fan-speed adjustment
✗ Standard Intel cooler has similar performance
FULL REVIEW Apr 2007



ECS AMD690GM-M2

★★★★★

£47 inc VAT

While Nvidia and Intel generally work on ever-more expensive and complicated motherboard chipsets, it's good to see AMD go the other way for a change and make a chipset for the budget builder. ECS's AMD690GM-M2 is the first motherboard we've seen to use AMD's 690G chipset, and it costs an amazing £47.

With such a low price you might expect that ECS has cut corners, but it's a surprisingly well-featured motherboard with Radeon X1250 onboard graphics. More impressively, the back panel has D-sub and digital-only DVI-I (HDCP enabled) outputs, so you can run two monitors without having to buy a dedicated graphics card. For games it can't keep up with a dedicated graphics card, limping through our Call of Duty 2 test, but it should cope with older titles at low resolutions. Should you want to upgrade, there's a PCI-E x16 slot. Further expansion is provided by the PCI-E x1 and two PCI slots.

The AMD690GM-M2 takes Socket AM2 processors, so you can run any of AMD's new range. Unfortunately, there are only two DDR2 memory slots, although two more have been marked out on the motherboard. As Windows Vista requires more memory than XP, four slots would have been nice. The BIOS lacks any overclocking options, but you're unlikely to miss them on an entry-level board such as this.

There's plenty of room for storage thanks to the four SATA2 ports, which you can use in a RAID array. Four USB2 ports and Gigabit Ethernet provide scope for external storage. There's no FireWire, not even through a motherboard header, but with few FireWire PC peripherals you're unlikely to miss it, unless you have a digital video camera.

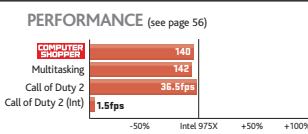
If you fancy building a cheap PC or media centre, ECS's AMD690GM-M2 is a brilliant choice. It has everything you need and is excellent value.

David Ludlow

SUMMARY

- ✓ Two monitor outputs
- ✓ Low price
- ✗ Only two memory slots

AMD MOTHERBOARD AMD 690G chipset, supports AMD Socket AM2 processors, two PCI, one PCI-E x1, one PCI-E x16 slot, two DIMM slots, Gigabit Ethernet, four USB2
PART CODE AMD690GM-M2
SUPPLIER www.lambda-tek.com
DETAILS www.ecs.com.tw



BFG PhysX

★★★

£133 inc VAT

Having a physics engine in a computer game generally means that each level will include cardboard boxes that bounce unrealistically when they hit the ground, or a CRT that wobbles unconvincingly when you bump into a table. This is because calculating more realistic physics is too processor intensive. BFG's PCI PhysX card houses an AGEIA PhysX chip, which performs complex physics calculations that would overload a standard processor. The aim is to make truly realistic effects, from curtains that billow in the wind to explosions that throw hundreds of barrels in the air.

AGEIA's demos show exactly what the card is capable of. CellFactor: Combat Training is particularly impressive. Running at full pelt using your Force-like powers causes everything that isn't tied down – including girders, barrels and even tanks – to spin away across the screen with no slow-down. Without the PhysX card there's no doubt that a regular computer would be stuttering badly as it tried to cope with all these calculations.

Ability certainly isn't a problem, but support is. Games have to be written specifically for PhysX, but currently there aren't many titles. Ghost Recon is probably the best known, but it's not that impressive. The PhysX card introduces better explosions and the lampposts fall down more realistically, but these effects aren't worth £133. We also found that the game ran around 4fps slower with the PhysX card installed than without it.

None of the other games are any more impressive and we've yet to see a title that pushes the PhysX card as far as the bundled demos. This means you're paying £133 for a card that offers very little improvement over a standard PC. With Nvidia rumoured to be working on its own physics hardware, AGEIA will have its work cut out trying to get games developers to write games that really take advantage of its hardware.

PhysX demonstrates the power of physics hardware, but it's let down by games support. Until there's a title that requires one of these cards, you're better off putting the £133 towards a better graphics card.

David Ludlow

SUMMARY

- ✓ Can make games more realistic
- ✗ Expensive
- ✗ Poor game support

PHYSICS CARD PCI interface, PhysX chip, 128MB GDDR3 RAM running at 366MHz (733MHz effective)
PART CODE BFGPHYSX128P
SUPPLIER www.dabs.com
DETAILS www.ageia.com



MSI G965MDH

★★★★★

£87 inc VAT

EXCLUSIVE

MSI's G95MDH motherboard works with any Intel LGA775 processor. It has GMA X3000 onboard graphics, so it's a good choice if you're not interested in games and don't need an external sound card. It has an analogue D-sub output, but there's no DVI option. We had trouble running Call of Duty 2 in Windows Vista as the game crashed, telling us there was a problem with DirectX 9c. Neither the latest graphics drivers nor a fresh installation of DirectX 9c fixed the problem, although we had no trouble with the Aero Glass interface, which also uses DirectX 9c. We had no problem when we installed our ATI Radeon X1950 Pro in the PCI-E x16 slot, as you can see from our results.

The board has four memory slots, which support up to 8GB of DDR2 533 or 667MHz, or 4GB of DDR2 800MHz RAM. That's still plenty for any operating system, though. The memory slots are set quite close to the PCI-E x16 slot, so a long graphics card can make it difficult to install or remove memory.

This is the first motherboard we've seen to use a Trusted Platform Module (TPM) chip. If you have Windows Vista Ultimate Edition, you can use the TPM chip to encrypt your hard disk. For those with other operating systems, the TPM chip provides no benefit.

There's plenty of room for storage thanks to the six SATA2 ports. As you'd expect, this can be used in a RAID array. Other expansion options include four USB2 ports, PCI and PCI-E x1 slots, 10/100/1,000 Ethernet port and FireWire. Oddly, the rear of the board also has a serial port, which is unlikely to be used.

We were very pleased with the G965MDH's performance in Windows, as it achieved some of the highest scores we've seen. With support for all Intel's latest processors, including the quad-core Core 2, it's a powerful motherboard. Budget buyers, however, are advised to buy an Intel 945G-based board.

David Ludlow

SUMMARY

- ✓ Excellent performance
- ✓ Good expansion
- ✗ Games wouldn't work with Vista

INTEL MOTHERBOARD Intel 965 chipset, supports socket LGA775 processors, two PCI, one PCI x1, one PCI-E x16, four DIMM slots, Gigabit Ethernet, four USB2, FireWire
PART CODE G965MDH-FI
SUPPLIER www.lambda-tek.com
DETAILS www.msi.com.tw

